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20 JUL 1977

MEMORANDUM FOR: Chief, Communications Engineering, OC

25X1A FROM: [redacted]
Chief, Real Estate and Construction Division, OL

25X1A SUBJECT: [redacted] Air Conditioning (C)

REFERENCE: Memo dtd 3 May 77 to C/RECD/OL fr AC/OC-E, same subject (OCE-M77-179)

1. (U) In response to the referent memorandum, a survey of the HVAC systems was made to determine the deficiencies with the existing systems and to develop recommendations for the critical system.

2. (U) A major change which has been directly responsible for the unsatisfactory condition of the chilled water system was the removal of the air-conditioning system in Room No. 4. This change has taxed the Acme chillers in Room No. 21 with the additional requirements beyond the design capacity, which provided redundancy and adequate standby compressors. The problem has been compounded by the installation of a third self-contained chiller in series with the existing Acme chillers. It is not practical to control water temperatures for a 10° F. cooling range using a number of chillers connected in series with a number of compressors. Further, the time guard compressor protection feature on the York chiller prohibits satisfactory or reliable modes of operation. Because of the existing piping and pumping arrangement, parallel connection of chillers would have required major design changes.

3. (U) In order to determine the best approach for upgrading the chilled water system, future cooling load requirements and anticipated building expansion must be known. Possible options are as follows:

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a. Modify existing system by installing a sequential controller, remove the protective time guard on the York chiller, and install an electric steam boiler for humidification. (Adapting multistep controllers for three chillers connected in series may not be practical or workable. An alternate solution for correcting the existing deficiencies would be to split the chilled water distribution.)

b. Replace one or both Acme chillers with larger units. Install an electric steam boiler.

c. Replace existing Acme chillers with centrifugal chillers. Install an electric steam boiler.

d. Construct a new mechanical room to house two centrifugal chillers and an oil-fired steam boiler.

4. (U) The installation of separate chillers for the MAX equipment, electrically connected to the UPS, will be considered along with any of the above options.

5. (U) To properly evaluate the HVAC system, it is recommended that the existing and projected equipment load data be shown on a plan and be submitted to Real Estate and Construction Division (RECD). In addition to the projected equipment load, the approximate size of anticipated building expansion, if any, is also required for sizing the air conditioning and space required for the equipment.

6. (U) On receipt of the information cited above, RECD will make a detetmination on which of the options are most feasible. The estimated costs of an architect-engineer (A-E) for options 3a. through 3d. are $3,000; $7,000; $12,000; and $32,000 respectively. The time for accomplishing the design varies from approximately 20 days to 65 days.

7. (U) If either of the two higher cost options are elected, a period of 3 weeks will be required to get an A-E contract.

ILLEGIB [redacted] [redacted] 25X1A

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